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AMSAT NEWS SERVICE
ANS-124

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see:
http://www.amsat.org/mailman/listinfo/ans

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ANS-124 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 124.01
From AMSAT HQ KENSINGTON, MD.
DATE May 3, 2020
To All RADIO AMATEURS
BID: $ANS-124.01

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Due to the COVID-19 pandemic, the AMSAT office
is closed until further notice. For details, please visit
https://www.amsat.org/amsat-office-closed-until-further-notice/

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This effort would not have been possible without the hard work and leadership of Robert Bankston, KE4AL, in his position as Vice President of User Services at AMSAT. Significant hours were put into this project. I applaud and congratulate Robert for a successful launch.

73,

Clayton
W5PFG
AMSAT President

[ANS thanks Clayton Coleman, W5PFG, AMSAT President, for the above information]

Call for Nominations - 2020 AMSAT Board of Directors Election

AMSAT solicits nominations for the 2020 AMSAT Board of Directors election, to be held in the third quarter of the year. The seats of the following three incumbent Directors expire in 2020 and will be filled by this year's election: Tom Clark, K3IO; Mark Hammond, N8MH; and Bruce Paige, KK5DO. Further, up to two Alternate Directors may be elected for one-year terms.

A valid nomination for Director must be written and requires either one Member Society or five current individual members in good standing to nominate an AMSAT member. Written nominations, with the nominee’s name, call sign, and contact information, as well as the nominators' names, call signs, and contact information, should be sent to the AMSAT Secretary:

Brennan Price, N4QX
300 Locust St SE, Unit E
Vienna VA 22180-4869
brennanprice(a)verizon.net

A copy should be sent to AMSAT Manager, Martha Saragovitz, at martha(a)amsat.org.

The AMSAT bylaws require that the nomination be written and in the form specified by the Secretary. In light of the ongoing pandemic and the resulting closure of the physical office, the Secretary has elected to accept written nomination materials in electronic form, including e-mail or electronic image of a paper document. Fax transmissions cannot be accepted due to the closure of the office.

No matter what means are used, petitions MUST be received by the Secretary no later than June 15th. The Secretary will verify the qualifications of candidates and nominating members or Member Societies as petitions are received, and will notify candidates whether their nominations are in order by the end of June.

[ANS thanks Brennan Price, N4QX, AMSAT Secretary, for the above information]

RS-44 Transponder Now Active

The amateur satellite world was surprised to wake up to the news on April 30th that a new transponder was activated for testing and open for use by amateurs worldwide

Constructed by specialists at Information Satellite Systems and

Students at Siberian State Aerospace University, DOSAAF-85 was launched on a Rockot/Breeze-KM launch vehicle from Plesetsk Cosmodrome on December 26, 2019. The satellite apparently failed to separate from the upper stage of the launch vehicle and remains attached. The satellite's name commemorates the 85th anniversary of the Voluntary Society for the Assistance to the Army, Aviation, and Navy (DOSAAF), the organization responsible for the military training of Soviet youth.

Designated RS-44, or Radio Sputnik 44, the satellite carries a 60 kHz wide V/u linear transponder and a CW beacon. With an orbit of 1511 km x 1175 km and an inclination of 82.5 degrees, this is the highest orbiting functioning amateur satellite available worldwide. Due to the 1511 km apogee, regular DX contacts should be easy to make. The first claimed DX record came from Joe Werth, KE9AJ, and Jérôme LeCuyer, F4DXV, who reported a 6,993 km trans-Atlantic QSO between EN50gn09 in Illinois and JN04iu40 in France. This was quickly eclipsed less than 24 hours later when Casey Tucker, KI7UNJ, and Tetsurou Satou, JA0CAW, reported the first trans-Pacific QSO between CN93jw (Oregon, USA) and PM97nw (Niigata, Japan), a distance of 7,859 km. The theoretical maximum range for QSOs via RS-44 is 7,942 km.

The NORAD ID is 44909, object 2019-096E.

Initial reports from the first days of operation suggest that the transponder is very sensitive and easily workable with low power and handheld antennas, however significant periodic fading is reported, likely due to the fact that the satellite remains attached to the upper stage of the launch vehicle and is unable to deploy its gravity gradient boom to stablize itself.

The satellite is planned to remain continuously available for testing purposes until May 11th at which time a decision on further operations will be made.

The Keplerian elements for RS-44 have been added to the AMSAT and CelesTrak distributions, as well as several popular tracking apps. The ARRL has released version 11.10 of the TQSL configuration file to add support for RS-44 to LoTW.

RS-44 – V/u Inverting Analog SSB/CW
Uplink (LSB) 145.935 MHz through 145.995 MHz
Downlink (USB) 435.610 MHz through 435.670 MHz
CW Beacon 435.605 MHz

[ANS thanks Dmitry Pashkov, R4UAB, Igor Blinov, RW3XL, Nico Janssen, PA0DLO, the ARRL, and others for the above information]

Virginia Tech Camera on AO-92 Takes Stunning Photos, Additional Passes Planned Tuesday, May 5th

The Virginia Tech camera on board AO-92 was activated on two passes over North America on Tuesday, April 28th. Several great photos were taken, captured by amateur stations running FoxTelem, and uploaded to the AMSAT Central Scrutinizer. All of the photos taken by AO-92 can be viewed on the AMSAT website at the link below.

The Virginia Tech camera will be activated again on Tuesday, May 5th during morning passes over the United States. The camera remains active for 45 minutes after being enabled by a ground station.

Stations in the United States, the Caribbean, Mexico, Central, and

South America are encouraged to set their stations up to receive and upload high speed telemetry in FoxTelem. FoxTelem downloads and instructions can be found at https://www.g0kla.com/foxtelem/index.php

AO-92 Camera Image Archive:

https://www.amsat.org/tlm/showImages.php?id=4

[ANS thanks Drew Glasbrenner, KO4MA, AMSAT Vice President - Operations for the above information]

Redesigned AMSAT CubeSat Simulator Launched

A new design for the CubeSatSim, the AMSAT CubeSat Simulator is now available on GitHub (http://cubesatsim.org/code). The CubeSatSim is a Raspberry Pi Zero W-based functional model of a “1U” CubeSat nano-satellite for demonstrations and educational outreach. It has a 3D-printed frame structure and is designed to act, as reasonably as possible, as one flying in Low Earth Orbit (LEO). The simulator runs on rechargeable battery power and solar panels and transmits its authentic voltage, current, and temperature telemetry on the UHF Amateur Radio band. The CubeSatSim has been presented at the AMSAT Space Symposium the past two years and at Hamvention last year.

The new design was developed to reduce the cost to build and to improve functionality. Jim McLaughlin, KI6ZUM, and David White, WD6DRI, are prominent STEM advocates and school mentors in the San Diego area. They offered to help redesign the hardware and collaborated with Alan Johnston, KU2Y, AMSAT VP Educational Relations, and Pat Kilroy, N8PK, over the past nine months. The resulting design has reduced the cost to build in half (from around $400 to around $200) and added a new Fox-1 emulation mode. In addition to the AFSK (Audio Frequency Shift Keying) and 1200 bps APRS (Automatic Packet Reporting System) telemetry in AO-7 format of the original design, the new version supports DUV (Data Under Voice) FSK (Frequency Shift Keying) 200 bps telemetry compatible with Fox-1A through Fox-1D and BPSK (Binary Phase Shift Keying) 1200 bps telemetry compatible with HuskySat-1 and the upcoming Fox-1E. Chris Thompson, G0KLA/AC2CZ, the author of AMSAT’s FoxTelem satellite telemetry software, has put out a testing version 1.09 of the software that supports the CubeSatSim. Instructions on how to download and configure this test version are on the GitHub Wiki.

http://cubesatsim.org/wiki

Also new to the CubeSatSim is a STEM Payload board with a STM32F103C8T6 “Blue Pill” Arduino compatible microcontroller. The board also has a built-in BME-280 Temperature Humidity Barometric Pressure Sensor and an MPU-6050 (GY-521) 3-Axis Accelerometer and Gyro. Also new is a tape measure dipole or monopole or SMA antenna, an integrated Band Pass filter, and a sturdy new 3D printed frame and more powerful solar panels.

A new Twitter account @CubeSatSim has also been launched. Follow to get the latest updates on the CubeSatSim including videos and photos. Links to all CubeSatSim resources are at CubeSatSim.org.

More details on the redesigned CubeSatSim can be found in the March/April 2020 edition of The AMSAT Journal, available at https://tinyurl.com/ANS-MarAprJournal

The CubeSatSim team wishes to thank the AMSAT board, President, and all AMSAT members for their ongoing support of this educational project.

[ANS thanks Dr. Alan Johnston, KU2Y, AMSAT Vice President - Educational Relations for the above information]

Changes to AMSAT TLE Distribution for April 30, 2020

The following satellites have decayed from orbit and have been removed from this week's AMSAT TLE Distribution:

ALMASAT-1 - NORAD Cat ID 38078 (Decayed from orbit April 25, 2020).
nSIGHT1 - NORAD Cat ID 42726 (Decayed from orbit April 25, 2020).

The following satellite has been activated and added to this week's AMSAT TLE Distribution:

RS-44 - NORAD Cat ID 44909.

Per Nico Janssen, PA0DLO concerning RS-44:

"The new amateur payload DOSAAF 85 (RS-44) appears to work very well. Doppler measurements confirm that it is indeed object 44909, 2019-096E. The satellite identifies itself as "RS44" (i.e. Radio Sputnik 44) on its CW beacon on 435.6043 kHz. The passband is about 63 kHz wide. It may also have a downlink between 2400 and 2485 MHz. The frequencies of RS44/DOSAAF 85 have not been IARU coordinated. The satellite is in an elliptical orbit with a perigee of 1175 km, an apogee of 1511 km and an inclination of 82.5 degrees.

The payload is apparently attached to the Breeze-KM upper stage of a Rokot launch vehicle that launched three Gonets satellites on December 26, 2019. It was originally expected to launch in 2015. It is based on the Yubileiniy platform."

[ANS thanks Ray Hoad, WA5QGD, AMSAT Orbital Elements Manager, for the above information]

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amateur space stations, the Commission also seeks comment on a disposal bond requirement for certain spacecraft. AMSAT is evaluating the FNPRM and will file comments expressing our views of the proposed regulations.

The adopted R&O / FNPRM can be found at
https://docs.fcc.gov/public/attachments/FCC-20-54A1.pdf

[ANS thanks Paul Stoetzer, N8HM, AMSAT Executive Vice President, for the above information]

VUCC Awards-Endorsements for April 2020

Here are the endorsements and new VUCC Satellite Awards issued by the ARRL for the period April 1, 2020 through May 1, 2020.

Congratulations to all those who made the list this month!

CALL	Apr	May
KO4MA	1750	1753
K7TAB	531	600
AE5B	442	450
ND0C	301	346
N4DCW	201	300
KC9UQR	252	275
WA9JBQ	225	250
W4DTA	217	240
WI6K	New	200
S57NML	126	179
DL4ZAB	150	172
KS1G	134	170
YO2CMI	100	168
KE0WPA	108	152
ZS5LEE	New	105
VE3CGA	New	100

If you find errors or omissions. please contact me off-list at <mycall>@<mycall>.com and I'll revise the announcement. This list was developed by comparing the ARRL .pdf listings for the two months. It's a visual comparison so omissions are possible. Apologies if your call was not mentioned. Thanks to all those who are roving to grids that are rarely on the birds. They are doing most of the work!

[ANS thanks Ron Parsons, W5RKN, for the above information]

Space Apps COVID-19 Challenge Virtual Hackathon, May 30-31

NASA, ESA (European Space Agency) and JAXA (Japan Aerospace Exploration Agency) are inviting coders, entrepreneurs, scientists, designers, storytellers, makers, builders, artists, and technologists to participate in a virtual hackathon May 30-31 dedicated to putting open data to work in developing solutions to issues related to the COVID-19 pandemic.

During the global Space Apps COVID-19 Challenge, participants from around the world will create virtual teams that - during a 48-hour period - will use Earth observation data to propose solutions to COVID-19-related challenges ranging from studying the coronavirus that causes COVID-19 and its spread to the impact the disease is having on

the Earth system. Registration for this challenge opens in mid-May.

"There's a tremendous need for our collective ingenuity right now," said Thomas Zurbuchen, associate administrator for NASA's Science Mission Directorate. "I can?t imagine a more worthy focus than COVID-19 on which to direct the energy and enthusiasm from around the world with the Space Apps Challenge that always generates such amazing solutions."

The unique capabilities of NASA and its partner space agencies in the areas of science and technology enable them to lend a hand during this global crisis. Since the start of the global outbreak, Earth science specialists from each agency have been exploring ways to use unique Earth observation data to aid understanding of the interplay of the Earth system -- on global to local scales -- with aspects of the COVID-19 outbreak, including, potentially, our ability to combat it. The hackathon will also examine the human and economic response to the virus.

ESA will contribute data from the Sentinel missions (Sentinel-1, Sentinel-2 and Sentinel-5P) in the context of the European Copernicus program, led by the European Commission, along with data from Third Party contributing Missions, with a focus on assessing the impact on climate change and greenhouse gases, as well as impacts on the economic sector. ESA also is contributing Earth observation experts for the selection of the competition winners and the artificial-intelligence-powered EuroDataCube.

"EuroDatacube will enable the best ideas to be scaled up to a global level," said Josef Aschbacher, director of Earth Observation Programmes at ESA. "The pandemic crisis has a worldwide impact, therefore international cooperation and sharing of data and expertise with partners like NASA and JAXA seems the most suitable approach."

JAXA is making Earth observing data available from its satellite missions, including ALOS-2, GOSAT, GOSAT-2, GCOM-C, GCOM-W, and GPM/DPR.

"JAXA welcomes the opportunity to be part of the hackathon," said JAXA Vice President Terada Koji. "I believe the trilateral cooperation among ESA, NASA and JAXA is important to demonstrate how Earth observation can support global efforts in combating this unprecedented challenge."

Space Apps is an international hackathon that takes place in cities around the world. Since 2012, teams have engaged with NASA's free and open data to address real-world problems on Earth and in space. The COVID-19 Challenge will be the program's first global virtual hackathon. Space Apps 2019 included more than 29,000 participants at 225 events in 71 countries, developing more than 2,000 hackathon solutions over the course of one weekend.

Space Apps is a NASA-led initiative organized in collaboration with Booz Allen Hamilton, Mindgrub, and SecondMuse. The next annual Space Apps Challenge is scheduled for October 2-4.

For more information about NASA Space Apps Challenges, visit:
https://www.spaceappschallenge.org/

[ANS thanks NASA for the above information]

On-Line Student STEM: TI Codes Contest 2020

Texas Instruments and NASA have announced the "TI Codes Contest 2020". This STEM activity invites student teams to connect and learn together

remotely to let their imaginations reach new heights by solving this unique challenge during the 20th anniversary of humans on the International Space Station (ISS):

> Propose a way to automate or optimize a process or product for living and working on the ISS. Then use coding and Texas Instruments (TI) technology to design and build a model of the solution.

Stage 1: Pitch your idea - is running now. Teams connect virtually with up to five students, ages 13–19, plus an adult sponsor. (A sponsor can be a teacher, parent or other adult who can mentor students remotely.) Then, determine which process or product your team wants to automate or optimize that would help the International Space Station. The deadline for submissions: May 21, 2020, at 11:59 p.m. Central time.

Access full contest rules, prize lists, NASA STEM resources, and enter your team at: https://education.ti.com/en/promotion/codescontest

[ANS thanks Texas Instruments and NASA for the above information]

First Guatemalan Satellite Deployed from the ISS

Guatemala’s first satellite, a small CubeSat called QUETZAL-1, was deployed from the International Space Station (ISS) on Tuesday, April 28, 2020.

Its primary mission is to test a sensor for remote data acquisition for natural resource management, which could be used to monitor water quality in inland water bodies.

QUETZAL-1 LogoThe satellite is part of the Japanese Kibo cubesat program, a product of the cooperation between, among others, the United Nations Office for Outer Space Affairs (UNOOSA), Universidad del Valle de Guatemala (UVG), and more institutions. The operational frequencies were chosen through cooperation from Guatemalan radio amateurs and the International Amateur Radio Union (IARU).

Downlink 4800 bps GMSK on 437.200 MHz.

The Quetzal-1 project team director is Guatemalan engineer José Bagur, TG8JAV, a graduate from mechatronics engineering at Universidad Del Valle.

Source: IARU Region 2 https://iaru-r2.org/

IARU Quetzal-1
http://amsatuk.me.uk/iaru/finished_detail.php?serialnum=653

Quetzal-1 Telemetry info https://uvg.edu.gt/cubesat-en/

Quetzal-1 Telemetry decoder http://www.dk3wn.info/p/?page_id=75524

Follow Quetzal-1 on Twitter https://twitter.com/quetzal1_uvg

[ANS thanks AMSAT-UK for the above information]

Former AMSAT Area Coordinator, Prominent DXer Herb Schoenbohm, KV4FZ, SK

Herb Schoenbohm, KV4FZ, became a silent key on Wednesday, April 29th

at his home in the U. S. Virgin Islands. A prominent contester and DXer, Herb served as an AMSAT Area Coordinator in the Caribbean in the 1970s and 1980s. Activating Anguilla as VP2EFZ, he gave Pat Gowen, G3IOR, the last country he needed on OSCAR 7 to complete the first DXCC via satellite.

[ANS thanks The Daily DX, QRZ.com, and former AMSAT Vice President - Operations Rich Zwirko, K1HTV, for the above information]

During the COVID-19 Pandemic, ARISS to Begin Experimental Demonstrations of School Contacts using a Multipoint Telebridge Amateur Radio Approach

Amateur Radio on the International Space Station (ARISS) is pleased to announce the first use of a concept called Multipoint Telebridge Contact via Amateur Radio, allowing school contacts for Stay-At-Home students and simultaneous reception by families, school faculty and the public.

During the last several weeks, efforts to contain the spread of the COVID-19 virus have resulted in massive school closures worldwide. In addition, the Stay-At-Home policies invoked by authorities, initially shut down opportunities for ARISS school contacts for the near future.

To circumvent these challenges and keep students and the public safe, ARISS is introducing the Multipoint Telebridge Contact via Amateur Radio concept. First operation of this experimental system occurred during a contact with a group of Northern Virginia Students located in Woodbridge, VA on Thursday, April 30 at 13:35 UTC (9:35EDT). During this event, an ARISS telebridge radio ground station linked to the astronaut on the International Space Station (ISS)ham radio station and each Stay-At-Home student and their teacher was individually linked to the telebridge station. Under the teacher’s direction, each student, from their home, takes a turna sking their question of the astronaut.

Quoting ARISS Chair Frank Bauer, “This approach is a huge pivot for ARISS, but we feel it is a great strategic move for ARISS. In these times of isolation due to the virus, these ARISS connections provide a fantastic psychological boost to students, families, educators and the public. And they continue our long-standing efforts to inspire, engage and educate students in STEAM subjects and encourage them to pursue STEAM careers.”

An archive of the April 30th contact can be viewed at https://youtu.be/Cu8I9ose4Vo.

About ARISS:

Amateur Radio on the International Space Station (ARISS) is a cooperative venture of international amateur radio societies and the space agencies that support the International Space Station (ISS). In the United States, sponsors are the Radio Amateur Satellite Corporation (AMSAT), the American Radio Relay League (ARRL), the ISS National Lab, and National Aeronautics and Space Administration (NASA). The primary goal of ARISS is to promote exploration of science, technology,engineering, and mathematics (STEAM) topics by organizing scheduled contacts via amateur radio between crew members aboard the ISS and students in classrooms or public forms. Before and during these radio contacts, students, educators, parents, and communities learn about space, space technologies, and amateur radio. For more information, see www.ariss.org

[ANS thanks Dave Jordan, AA4KN, ARISS PR, for the above information]

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+ The May 2020 issue of Aerospace America, the monthly magazine of the American Institute of Aeronautics and Astronautics (AIAA) features an article entitled "Cosmic GPS" describing the emerging use of GPS on spacecraft flying beyond the GPS constellation altitude and, eventually, to the moon. Above-constellation use of GPS was first demonstrated on AMSAT-OSCAR 40. AMSAT Vice President - Human Space-flight Frank Bauer, KA3HDO, is extensively quoted in this article. Read it at https://aerospaceamerica.aiaa.org/features/cosmic-gps/

+ AMSAT's Zazzle store has added a few new products, including a water bottle, car flag, and fanny pack. A wide variety of other products are also available, including the popular new OSCAR t-shirt. Check out the store at https://www.zazzle.com/store/amsat_gear. 25% of the purchase price of each product goes to AMSAT to help Keep Amateur Radio in Space.

+ Scientists from NASA, the United States Geological Survey (USGS) and the Lunar Planetary Institute have created a detailed new map of the lunar surface in stunning color. Called the Unified Geological Map of the Moon, it marries decades of surveys of the moon’s surface going as far back as Armstrong and Aldrin’s Apollo mission, with more re-cent data from NASA and JAXA. It doesn’t just look pretty – the map will greatly help NASA and other organizations plan future landing sites optimized for scientific missions. NASA's Artemis project could take humans to the moon as early as 2024. AMSAT, along with ARISS, partners, is developing an amateur radio package, including two-way communication capability, to be carried on-board Gateway in lunar or-bit as part of an Artemis precursor initiative. The digital map is available for the public at: https://on.doi.gov/2YnZGAO

+ Scott Chapman, K4KDR, is featured in Scott Manley's new video about the Iranian Noor satellite. https://youtu.be/SPTz7Ig9RQE

+ As another part of the RSGB "Get on the air to care" campaign, the May edition of RadCom is being made available to radio amateurs around the world to read online as a sample edition. A number of IARU national societies have taken a similar step and the RSGB is happy to join those societies in supporting the worldwide amateur radio community during these difficult times: https://www.rsgb.org/sampleradcom

+ In a Public Notice released on April 30th, the FCC confirmed that amateur license examinations may be conducted remotely. The full Public Notice can be found at the link below: https://docs.fcc.gov/public/attachments/DA-20-467A1.pdf

+ The AMSAT Folding(a)home team continues to climb the rankings. Now in the top 2,500 of all teams at the time of this writing, the team has grown to 37 members with 70 active CPUs within the past 50 days and includes five members in the top 100,000 of all users. Alex Free, N7AGF, is our top contributor with over 21,000,000 points credited to AMSAT's team. For more information about the Folding(a)home project and how you can contribute to scientific research, including the fight against COVID-19, see https://foldingathome.org/. AMSAT's team number is 69710: https://stats.foldingathome.org/team/69710

+ In advance of their move to a new headquarters location, the FCC has updated their offical seal. The new seal includes a satellite and ground station, reflecting the increasing importance of space communications. https://twitter.com/FCC/status/1255882365936775171

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73 and remember to help Keep Amateur Radio in Space,

This week's ANS Editor,

Paul Stoetzer, N8HM
n8hm at amsat dot org